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Using audio-visual vignettes to explore how critical care nurses make the decision to restrain a patient with psychomotor agitation.

Abstract

Background

Vignettes are used regularly in nursing research and education to facilitate the exploration of complex clinical situations. However, paper-based vignettes lack clinical realism and do not fully recreate the pressures, sights, and sounds of the clinical setting, limiting their utility for studying complex decision-making processes.

This paper describes the process through which audio-visual vignettes were created for a qualitative Think Aloud study. The study used vignettes to explore how critical care nurses make decisions to restrain patients with varying degrees of psychomotor agitation.

Aim

To discuss the approach taken to develop and implement audio-visual vignettes as a remote data collection tool in a qualitative study.

Discussion

The authors discuss how they developed a series of audio-visual vignettes to enable them to explore the complex decision-making process undertaken by critical care nurses prior to using restraint to manage an agitated patient. The practicalities of filming, editing and hosting are described, alongside discussion of the theoretical and clinical background which informed the creation of the vignettes.

Conclusion

Audio-visual vignettes are a cost and time-effective way of exploring decision making remotely in challenging environments. This innovative method facilitates the study of decision-making under simulated clinical pressures and captures data about how complex decisions are made.

Implications for practice and future research

Audio-visual vignettes are an innovative data collection tool for researchers and have potential for use in educational settings. They offer the opportunity to explore complex clinical decision making remotely. Clinical accuracy is essential for participant immersion and simulation of the environment and its pressures. The method could be further enhanced through making the vignettes responsive to participant decisions.

Introduction

Finch (1987) described vignettes as 'short stories about hypothetical characters in specified circumstances, to whose situation the interviewee is invited to respond' (pg 105). Within these circumstances, vignettes allow the exploration of participants' beliefs, attitudes, judgements, and perceptions (Spalding and Phillips, 2007, Stacey et al., 2014). Vignettes have been increasingly used in healthcare education, research, and in the development of clinical decision pathways (Brauer et al., 2009). Vignettes or scenarios have been identified as a novel data collection method, which can produce rigorous and actionable data (Ramirez et al., 2015). They allow the researcher to work

through complex clinical realities and aim to provide an immersive decision-making environment to facilitate study of decision-making processes without causing disruption to patient care.

Two main methods of vignette development have been identified (Brauer et al., 2009): the first is the factorial method. Here vignettes are created to describe all the possible combinations seen in a given circumstance or problem. This approach can be used to produce quantitative data about variables involved in decision making. The second method involves storytelling, where typical scenarios are created by the researcher (Finch, 1987). The second method is more commonly found in qualitative studies and offers the opportunity to explore the decision-making process qualitatively. This approach was chosen for the study described in this paper.

Vignettes can be presented in written, audio, or audio-visual formats. Written scenarios are more common in healthcare research and education (Brauer et al., 2009). They are easy and cost-effective to produce. However, they struggle to reproduce the sights, sounds and pressures of clinical practice and, as such, lack accuracy and realism. The development of audio-visual vignettes for a research project may appear to be a challenge. This paper presents a comprehensive account of how the authors created the vignettes, from the under-pinning decision-making theory through to filming, editing, and hosting.

Development of the vignettes

Background to the study

In critical care, patients with psychomotor agitation are at risk of disrupting life-sustaining therapies, for example through dislodging an endotracheal tube or vascular access device. Chemical or physical restraint are often cited by staff as the main method of preserving patient safety (Benbenbishty et al., 2010). However, the efficacy of both forms of restraint in improving patient safety is unproven and its use is associated with impaired long-term recovery (Ai et al., 2018, Pan et al., 2018).

Nurses appear to be the primary decision makers in applying restraint in critical care settings. However, little is known about the cognitive processes and influencing factors which lead to this decision (Teece et al., 2020). In order to capture these processes and explore how nurses make the decision to restrain a patient, filmed audio-visual vignettes, informed by cognitive continuum theory (Hamm, 1988) and expert knowledge, were developed, hosted on YouTube and implemented using a Think Aloud (Ericsson and Simon, 1980) approach.

Study design

Think Aloud is a qualitative methodology which enables researchers to capture the problem-solving and decision-making activities used by participants as they perform a given simulated task. Think Aloud has been previously used in studies based in critical care (Han et al., 2007, Aitken et al., 2009). The method was proposed by Ericsson and Simon (1980) and enables the capture of sequential thought processes, as participants talk through their decision-making process in respect of a specific clinical scenario. The method is appropriate for use with audio-visual vignettes as it captures decisions made in response to visual cues. This method is differentiated from video reflexive ethnography through its focus on remote constructed scenarios rather than actual clinical practice (Ajjawi et al., 2020). The vignettes were created to provoke decisions relating specifically to the management of psycho-motor agitation and place participants in a ‘once removed’ position where they are not actually engaged in practice. The decisions made by participants in the vignettes are informed by their clinical practice and may lead to reflections on their lived experiences of such

situations. However, in contrast to video reflexive ethnography, participants are not filmed undertaking actual clinical practice.

Think Aloud is largely led by the participant, with the researcher acting as a guide and prompt to encourage the process. Participants were encouraged to think aloud by the interviewer through prompts such as 'please continue' or questions which asked the participant to elaborate on what they had just said. Questions focussed on three main issues and were intended to guide the Think Aloud process and ensure a comprehensive discussion of the decision-making process.

- How nurses perceived and assessed the behaviour of a delirious patient.
- How the working environment impacted on their management.
- If and why they made the decision to apply chemical or physical restraint or chose an alternative method of managing the patient.

The study aimed to explore how critical care nurses make the decision to restrain a patient with psychomotor agitation. Such decisions are made under pressure, with the nurse aiming to preserve patient, nurse and device safety. It was felt written scenarios would not facilitate clinically accurate judgements and decisions as they would allow the participant time to reflect and consider. The decision was made to film dedicated audio-visual vignettes because they offered a higher level of realism than written case studies, without the potential patient harm and clinical disruption which could occur if an observational study was undertaken. Showing a visual representation of agitated patients with varying degrees of clinical complexity was intended to place the nurse under pressure to make a decision regarding their choice of clinical intervention. This was hoped to reduce the possibility of responses rooted in social desirability bias. Audio-visual vignettes represent a pragmatic approach to the choice of a data collection tool. The resources required and associated cost of developing audio-visual vignettes is greater than of a written vignette. However, audio-visual vignettes remain relatively low-cost and, once filmed, can be viewed and used repeatedly. In addition, such vignettes are able to replicate the clinical environment without causing disruption, and offer a flexible remote method for describing and understanding complex decision making (Brauer et al., 2009).

Ethical considerations

This study received approval from the University of Leeds School of Healthcare Ethics Committee. The patients in the vignettes were portrayed by members of School of Healthcare staff who volunteered in response to an email invitation. The patients portrayed were fictitious.

Results and discussion

Creating the vignettes

Six patient scenarios were developed. Each patient had a past-medical history which reflected cues drawn from an integrative review focussed on factors leading to the decision to apply restraint in the critical care unit (Teece et al., 2020). A summary of the vignettes and included cues is presented in table 1. All patients portrayed aspects of behaviour associated with psycho-motor agitation or hyperactive delirium as described by the validated CAM-ICU tool (Ely et al., 2001). The context was made clear through the use of props, such as infusion devices and monitoring, which mimicked the set-up of an critical care bed area (Cooksey, 1996). Each vignette was written to last approximately three minutes. This duration was chosen because it was deemed sufficient to include the cues for

restraint assigned to each vignette. In addition, the patient is alone in the video. As critical care patients are closely observed in practice it was decided that a vignette depicting unsupervised agitated behaviour for longer than 3 minutes could become clinically inaccurate and break participant immersion.

The vignettes were developed with the aim of eliciting reactions and decisions from the participants. They were based on reflection on clinical practice, theories around nursing responses to 'unpopular' patients (Carveth, 1995), cognitive continuum theory (Hamm, 1988), and the results of the integrative review undertaken as background to this study (Teece et al., 2020). The review identified cues leading to restraint, such as the presence of invasive devices, reduced nurse to patient ratios, and patient behaviour which could risk device displacement (Teece et al., 2020). The Cognitive Continuum Theory (Hamm, 1988) proposes a range of modes of inquiry, with analytical thinking and intuition placed at opposite ends of the continuum. Analytical thinking is slower and more conscious than rapid, automatic decisions. A nurse can draw upon both modes concurrently or separately. Tasks are described in parallel to the continuum, ranging from well-structured to ill-structured. Hamm (1988) suggests that nurses adapt their decision-making method to the task being considered. This theory informed the creation of the vignettes through prompting the inclusion of opportunities to think analytically and intuitively through the cues presented.

Each vignette contained a variety of 'cues' which had been identified as potentially leading to restraint (Teece et al., 2020). Through the inclusion of these cues, the authors aimed to study how different participants reacted and the clinical decisions they made in response to each cue. For example, invasive lines or oral intubation were associated with restraint (Teece et al., 2020). Various cues were deliberately included in the vignettes to reflect a range of risk inferences and patient types and behaviours. For example, some patients were self-ventilating (low risk if treatment disrupted through agitation), whilst some were mechanically ventilated with invasive lines in-situ. These could be life-threatening if disrupted.

Vignettes are commonly rooted in the reflections of the researcher on their own practice or experience. This lends vignettes elements of descriptive detail and face validity, but can also increase the risk of researcher bias (Brauer et al., 2009). The vignettes developed for this study were drawn from the clinical experience of the author (AT) and the results of an integrative review of factors leading to restraint in critical care (Teece et al., 2020). An accurate representation of the environment under study is necessary to achieve face validity (Braun and Clarke, 2013). The patients depicted in the vignettes were fictitious but represent the variety of patients encountered in a general adult critical care setting and reflect common reasons for admission. They include a patient who was involved in a road traffic accident with a background of smoking and alcohol excess, and a patient who has undergone emergency repair of a ruptured AAA and is ready for weaning from the ventilator and extubation. A complete description of each vignette is included in Table 1.

To ensure content validity and minimise the risk of researcher bias, all six vignettes were reviewed by an independent critical care expert. The vignettes were checked for clinical accuracy and to ensure the patient behaviours were plausible. Accuracy is essential to optimise participant immersion in the vignette and elicit realistic responses. All six vignettes were approved by the clinical expert.

Storyboards & actors

An illustrated storyboard was created for each vignette (Figure 1). This depicted detail about the camera position, patient attachments and the sequential development of patient behaviour over the

course of the three-minute vignette. These were designed to guide simulated patient behaviours and ensure that portrayed behaviours did not deviate from those identified previously in the background review (Teece et al., 2020).

Rather than employing actors, internal School of Healthcare staff were recruited to appear in the vignettes. All had healthcare experience, and some had worked in critical care. To ensure they understood the behaviours which they would depict, a thorough briefing was given prior to filming. Academic staff who had volunteered to portray 'patients' used the illustrated storyboards to guide how they would portray the patient whilst being filmed. This ensured that behaviour did not deviate from the vignette design.

Scripting handover

A handover was scripted and recorded for each vignette. The handover was given verbally prior to the vignette beginning and followed the format of a typical critical care handover as delivered by author in practice. The handover provided information about the presenting complaint, past medical history, respiratory and haemodynamic status, and some comments about the patient's behaviour. Each vignette was introduced by either a subjective handover, which used descriptive terms to judge the patient's behaviour, or an objective handover, which used validated tools to present an assessment of delirium status and sedation level. The purpose of this was to explore whether and to what extent handover style impacted on the management decisions made by the receiving nurse.

Nursing handover facilitates the sharing of judgements of dysfunctional or deviant patient behaviour (Carveth, 1995). Subjective terms such as 'mad', 'poorly behaved', and 'not a proper patient' can be used by nurses to describe behaviours caused by hyperactive delirium despite the existence of objective tools such as the Richmond Agitation and Sedation Scale (RASS) and Confusion Assessment method for the ICU (CAM-ICU). Once a consensus is reached amongst nurses, biases and labels can be established and shared (Carveth, 1995). Handovers based on personal (subjective) rather than objective evaluations can allow biases to pervade the staff group (Johnson and Webb, 1995). Patient identity can be constructed in handover before staff meet the patient. This could cloud and influence a nurse's view of that patient and prevent an objective assessment. Thus, a label can become permanent through being repeatedly communicated and leads to an assumption of poor or 'difficult' behaviour in the labelled patient (Carveth, 1995). For example, a patient in one of the vignettes was described as a 'frequent flyer' having been admitted on previous occasions for deliberate self-harm. The intention was to see if the negative subjective descriptor impacted on the nurse's judgement and decision making. Other patients were described using tools such as CAM-ICU. Such a tool was used as an objective descriptor with numbers conveying the level of agitation, rather than to convey a personal judgement regarding the patient.

Agitated patients are often seen as an unpopular and challenging allocation in critical care (Zamoscik et al., 2017). The idea of the unpopular patient was first proposed by Stockwell (1972) based on a patient displaying 'deviant' behaviour, which departs from the norm expected by staff. Deviant behaviour can be anything deemed to be atypical or undesirable (Carveth, 1995). Perceived deviant behaviour leads the patient to be labelled as 'unpopular' by staff, and can reduce staff engagement with that patient (Michaelsen, 2012). Psychomotor agitation, although not uncommon in critical care, marks a departure from the compliant sedated and ventilated patient. These patients are widely considered by staff to be a 'proper' or genuine critical care patient (Williams, 2007). This label is harmful as it devalues vulnerable patients through its suggestion that they do not deserve a critical care bed (Lowbridge and Hayes, 2013). This is further emphasised by the practice of allocating junior staff to such patients (Williams, 2007), suggesting that they do not require expert

nursing care. These ideas were used as potential cues to prompt decision-making the in handovers. The impact of subjective and objective handovers would be explored further when the data from the study was analysed.

Filming & editing

The vignettes were filmed by a University videographer in the School of Healthcare clinical skills suite. A bed area was set up to replicate a critical care bed-space. Pumps, bags of fluid, monitoring and appropriate medical devices were placed around the bed area and attached to the simulated patients as required for each vignette. Each vignette was shot from a 'nurse's eye view' perspective, as if the nurse was seated at the front of the bed area (Figure 2). This is typically where critical care nurses sit to write notes and chart patient observations and was therefore considered to be the optimal place from which the nurse could observe their simulated patient and describe the clinical management decisions they would take.

Audio was recorded via microphones on two channels. The first channel was the verbal handover which was read aloud by the author (AT) at the start of each vignette. The second channel captured patient vocalisation if appropriate and ambient noise such as the rustling of sheets. Further background noise was added in editing. This included monitor alarms, muffled voices, footsteps and ventilator alarms if appropriate to the patient presentation. These sound effects were accessed free of charge via YouTube's creative commons licence. The addition of further ambient noise aimed to increase clinical realism and aid participant immersion.

The vignettes were deliberately broken up into segments in editing, with pause cards (a blank screen with the instruction 'Pause Now') inserted to indicate the times for semi-structured discussion to occur remotely. The breaking up of the vignettes draws on the educational theory of 'chunking' (Gobet et al., 2001). Chunking occurs when information is organised in the memory of the participant. A chunk is a collection of information segments which have strong associations with each other (Gobet et al., 2001). The aim of using chunks and segmenting the vignettes in this way was twofold. Firstly, there was a concern that nuanced cues might be missed if discussion was conducted concurrently with the vignette playing. Secondly, the use of chunks increases the amount of information that can be held in short-term memory (Gobet et al., 2001). This is because similar information and cues, for example device interference, is grouped together rather than being held in the memory as individual pieces of information (Gobet et al., 2001). Therefore, breaking up the vignettes to promote chunking enables participants to retain a greater amount of information about the patient and their rationales for their decisions.

The edited vignettes were uploaded to the researcher's YouTube channel. The channel and vignettes were marked as 'unlisted'. This prevented the videos being searched by title or hashtag. They can only be accessed via a direct URL. The URL was sent to participants via email ten minutes prior to the interview beginning. This decision was made to prevent participants viewing the vignettes prior to their interview and ensured that participants' judgements and decisions were immediate and unrehearsed. YouTube is an easy and cost-effective way to host audio-visual vignettes. It allowed both researcher and participant to access and view the vignettes concurrently during the interview.

Challenges & benefits of using audio-visual vignettes in qualitative research and education

Audio-visual vignettes are a flexible and relatively low-cost method to explore decision making in a replicated clinical environment. Once filmed, the vignettes can be used repeatedly in research or

educational projects such as simulated practice. The vignettes described in this paper were filmed with the purpose of researching how critical care nurses made complex clinical decisions. However, audio-visual vignettes could also be used in pre or post-registration teaching when discussing management strategies for clinical situations. Audio-visual vignettes could be especially useful in simulating clinical situations where teaching or observational research might disrupt clinical practice or compromise patient safety. This is especially important in the critical care setting, where nurses make frequent management decisions based on their assessments of rapidly changing clinical situations with high risk inference. In addition, the use of simulated patients avoids the risk of comprising patient anonymity which must be considered when undertaking direct observation in clinical areas.

University and clinical education alongside research have been disrupted by the COVID-19 pandemic and subsequent social distancing measures. Internet-hosted audio-visual vignettes offer a pragmatic of remote engagement with students and research participants to explore complex areas of practice. Clinical practice has seen increased acuity, with staff being relocated to support clinical areas which are experiencing high pressures. Vignettes such as those used in this study could be a useful tool in providing induction and education to staff working in unfamiliar clinical areas. The vignettes are pragmatic and inclusive. They can be viewed remotely at a time and location convenient to participant and researcher or educator.

Participants involved in the study for which these vignettes were created commented positively on the clinical realism of the vignettes and described how they felt pressure to make a decision to preserve patient safety and manage an escalating clinical situation. Additionally, participants reported that the situations depicted in the vignettes acted as a stimulus for personal reflection on clinical practice. However, some participants were frustrated by the linear nature of the vignettes. Their decisions did not impact on patient behaviours and this was reported to reduce realism, with participants anecdotally commenting that 'it wouldn't have got to this stage' because they believed that their previous decisions would have mitigated the level of agitation. This feedback could be considered in future adaptations of the method through the creation of vignettes which would alter in response to participant decisions.

Audio-visual vignettes aim to present realistic clinical sights and sounds and attempt to simulate the pressures of making decisions in clinical environments. To ensure participant immersion, the scenario presented must be as clinically realistic as possible. This may pose a challenge if a suitable filming venue, props and actors are not available.

Implications for practice and future research

Audio-visual vignettes are a novel and innovative method of collecting qualitative data. They offer researchers the opportunity to explore the behaviour of clinicians in complex situations without causing disruption to practice or patient care. Once recorded, audio-visual vignettes can be reused either remotely or face-to-face and are both cost and time-effective as a result. YouTube-hosted vignettes are accessible and facilitate remote data collection. They could also be easily used in educational settings to present complex clinical scenarios. However, linear vignettes, such as those used for this study, are limited by their lack of responsiveness to participant decision making. Researchers and educators may wish to build this capability into their own vignettes.

Conclusion

Audio-visual vignettes have the potential to form an effective and innovative part of qualitative research and educational practice. They are flexible and time-efficient, and can be hosted online to facilitate remote delivery of education or for use in research studies.

This paper provides an account of the development and implementation of vignettes in a Think Aloud study which aimed to explore complex decision-making in a critical care environment. The account is intended to guide and inspire other researchers or educators who are interested in developing innovative and creative methods in nursing or other healthcare disciplines.

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